Using the Inducible Caspase-9 Suicide-Safeguard System with iPSC and Bioluminescent Tracking.

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Public Summary:
For scientists working within the field of induced pluripotent stem cells (iPSCs), this protocol will provide a thorough walk-through on how to conduct in vitro and in vivo experiments that validate the function of a particular safeguard system technology. We provide instructions on how to generate inducible Caspase-9 (iC9) safeguard system with human iPSCs that act as normal or abnormal models of the cells for therapeutics to be tried after differentiation.

Scientific Abstract:
For scientists working within the field of induced pluripotent stem cells (iPSCs), this protocol will provide a thorough walk-through on how to conduct in vitro and in vivo experiments that validate the function of a particular safeguard system technology. In short, we provide instructions on how to generate inducible Caspase-9 (iC9) safeguard system with human iPSCs that act as normal or abnormal models of the cells for therapeutics to be tried after differentiation. These iC9-iPSCs should be modified prior to beginning this protocol by constitutively expressing luciferase, an enzyme capable of generating bioluminescent signals through the oxidation of the substrate luciferin. Monitoring the bioluminescent signal over time provides the information on whether a safeguard system is working or not.